

## **EXHIBIT 4**

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November 17, 2016

Craig J. Miller  
Deputy City Attorney  
Los Angeles City Attorney's Office  
200 N. Main Street, room 600 City Hall East  
Los Angeles, CA 90012

RE: Mears v. City of Los Angeles, et. al.  
USDC Case No: CV15-08441 JAK  
Wysocki v. City of Los Angeles, et. al.  
USDC Case No: CV15-09587 JAK

Dear Mr. Miller:

At your request, and pursuant to Federal Rule of Civil Procedure 26, below is a written summary of my opinions regarding the above named case. My opinions are based on my training, experience and research as a Professor and Chair of the Department of Emergency Medicine at the University of California San Diego School of Medicine and Health System. I have conducted numerous human research studies on the topic of restraint physiology and less-lethal weapons that have been published in peer-reviewed medical journals and presented at national medical meetings and scientific assemblies. I am also a practicing emergency physician, board-certified in the specialty of emergency medicine, and a Fellow of the American College of Emergency Physicians and American Academy of Emergency Medicine.

In formulating my opinions regarding the specific issues of this case, I have relied upon my own scientific and clinical research on restraint physiology and less lethal weapons, a review of the current medical and scientific literature relevant to this case, and the specific materials you forwarded me regarding the above named case, including the Force Investigation Division report and related documents, medical and pre-hospital care records including autopsy report of Mr. Mears, transcribed interviews of witnesses, first responders, and law enforcement officers, related training documents, and related photographs of the incident. If additional pertinent information is revealed and provided to me subsequent to this letter, my opinions may change.

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Briefly, on December 24, 2014, Mr. Michael Mears was a 39 year-old man involved in a combative struggle with law enforcement officers. Emergency medical services personnel were initially called to the scene due to Mr. Mears erratic and confused behavior. Los Angeles Police Department (LAPD) officers were called after requests for backup to the scene and found Mr. Mears screaming and shouting incoherently, violently thrashing his body back and forth. Officers approached Mr. Mears in order to restrain him to allow medical personnel to initiate field care and transportation to a medical facility. A combative struggle then ensued with Mr. Mears. During that time, in an attempt to gain his compliance, officers utilized both oleoresin capsicum (OC or pepper) spray and multiple Taser device exposures on Mr. Mears. Officers were eventually able to handcuff Mr. Mears's wrists behind his back in the prone position. In addition, his ankles were secured with a hobble strap. Officers then rolled Mr. Mears body and sat him upright. Paramedics then administered a sedative and he was subsequently transported to the University of California, Los Angeles (UCLA) Medical Center.

On arrival at UCLA, Mr. Mears was documented as presenting with altered mental status and aggressive behavior with a spit mask on, yellowing, and flailing his arms and legs. His vital signs were notable for a marked tachycardia in the 170s. Laboratory tests revealed a metabolic acidosis, hyperkalemia, hypoglycemia, and rhabdomyolysis. In addition, he was noted to be hyperthermic. While in the ED, Mr. Mears suffered cardiac arrest and advanced resuscitative measures were initiated including intubation with return of spontaneous circulation. He was subsequently admitted to the Intensive Care Unit. Despite aggressive medical care, Mr. Mears's condition deteriorated with circulatory shock, renal failure, liver failure, and disseminated intravascular coagulation. Subsequently, he suffered cardiac arrest for which he had no response and he was subsequently pronounced dead on December 26, 2014. On autopsy, the coroner attributed Mr. Mears's death to ventricular dysrhythmia as a result of cardiac enlargement with biventricular hypertrophy and four chamber dilatation with other conditions contributing but not immediately related to the immediate cause of death as cocaine intoxication and police restraint with use of taser.

I have been asked to provide an opinion case as to whether the manner in which Mr. Mears was restrained may have caused respiratory compromise and asphyxiation, or so-called positional, restraint or compression asphyxia that could have led to his subsequent demise. By way of background, positional or restraint asphyxia is a term that was initially used to describe the deaths of individuals who were found in body positions that compromised respiratory function. Most commonly, these cases involved individuals in whom their position led to obstruction of the upper airway (such as from extreme head-neck hyperflexion) and who were alcohol intoxicated (to the point of being unable to remove themselves from the lethal position). In none of these original cases was the individual restrained in the prone position by law enforcement.<sup>1</sup>

In the late 1980s, the term positional asphyxia was then applied as a cause of death in reports of sudden deaths that occurred to persons who were being restrained while in custody. Proponents of this theory argued that individuals placed in the hobble position

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(hogtie, hobble or prone restraint position in which individuals were placed prone on their stomach with wrists handcuffed behind the back and ankles secured to the handcuffs) were unable to breathe because the position caused chest wall and abdominal restriction that prevented adequate expansion or ventilation of the lungs and subsequently led to asphyxiation.

There is little scientific evidence to support the notion that prone restraint and body position results in respiratory compromise or asphyxiation. The theory of positional asphyxia as applied to custody restraint was largely based on the work of Reay et al, who studied 10 healthy subjects after exercise and found delayed recovery of blood oxygen levels and heart rate in the hobble position.<sup>2</sup> We conducted a more comprehensive study investigating the effects of body position on respiratory function after exertion that was published in the *Annals of Emergency Medicine* and reviewed in another article published in the *American Journal of Forensic Medicine and Pathology*.<sup>3,4</sup> In our study involving 15 human volunteers, we studied respiratory function in the sitting, supine (laying on the back), prone (laying on the stomach), and hobble position. While we found a slight progressive decrease in pulmonary function (the amount of air movement in the lungs), these changes were within normal range. Accordingly, we found no evidence of decreased blood oxygen levels or increased carbon dioxide levels (to suggest inadequate ventilation) in the hobble position. These findings have been confirmed by other independent investigators who found no significant decrease in blood oxygen levels in individuals placed in similar restraint positions.<sup>5,6</sup>

As a result of this evidence, Dr. Reay, one of the chief proponents of the positional asphyxia theory with prone restraint, has written that “the hog-tied prone position should be viewed as not producing significant physiologic respiratory compromise, and it does not produce any serious or life-threatening respiratory effects”.<sup>7</sup> Moreover, a recent, large epidemiologic study of over 1000 police restraint cases found no association between prone positioning and death or asphyxiation.<sup>8,9</sup>

In Mr. Mears’s case, he was actively resisting, moving, and vocalizing while being and restrained, as well as afterward when he was in the care of paramedics as well as Emergency Department staff. Accordingly, it is clear he did not suffer asphyxiation or cardiopulmonary arrest during his struggle with law enforcement or during the time he was placed and maintained in the restraint position.

Some have suggested that obese individuals such as Mr. Mears (his body mass index or BMI was greater than 30 kg/m<sup>2</sup>) may suffer respiratory compromise as a result of their large abdominal pannus causing compression of their thoracic cavity when in the prone position. This idea remains controversial as the prone position is often used in critically ill patients in intensive care units to actually improve pulmonary dynamics. More pertinent to Mr. Mears’s case, we previously conducted a study investigating the respiratory effects of the prone and hobble positions in obese individuals with BMIs > 30 kg/m<sup>2</sup> and found no evidence of respiratory compromise or hypoventilation when measuring oxygen or carbon dioxide levels.<sup>10</sup>

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Others have suggested that the force utilized by law enforcement personnel to restrain individuals like Mr. Mears may have resulted in additional compressive forces to his chest and abdomen that would have caused an inability to breathe and ventilate during the restraint process. This compressive or mechanical asphyxia refers to the notion that additional weight force during restraint causes greater respiratory compromise to an individual that can lead to asphyxiation. However again, Mr. Mears was noted to be vocalizing and moving while he was being restrained as well as after he was removed from the prone position, indicating he was moving air in and out of his lungs during this time and that he did not suffer cardiac or respiratory arrest while he was being restrained potentially with weight force by law enforcement.

In addition, we have conducted two studies investigating the effect of weight force while restrained on human volunteers. In our initial study, we found no evidence of hypoxia (decrease in oxygen levels) or hypoventilation (increase in carbon dioxide levels) in human subjects on whom moderate amounts of weight were placed on their back in the prone restraint position.<sup>11</sup> In our subsequent study, we placed up to 225 pounds of weight force on human subjects in the prone restraint position and found no life-threatening abnormalities in ventilation.<sup>12</sup> These results are consistent with other investigators who have conducted similar weight force studies on the prone restraint position and found no evidence of hypoxia to indicate risk for asphyxiation.<sup>13</sup>

Mr. Mears was exposed to a single 5 second OC pepper spray exposure. Some have argued that OC spray exposure can cause respiratory compromise that may put an individual, such as Mr. Mears, at risk for respiratory compromise. By way of background, oleoresin capsicum, the active component of OC spray, is the oily extract of the cayenne pepper plant, consisting of a complex mixture of capsaicinoids, including capsaicin. Capsaicinoids stimulate chemo-nociceptors in nerve endings and cause release of peripheral neuropeptides that can lead to neurogenic inflammation. As a result, OC exposure can cause irritation, pain and inflammation to the skin, eyes, and mucous membranes of the upper respiratory tract. With inhalation or oropharynx exposure, OC causes a variety of symptoms, including cough, gagging, inability to vocalize, and subjective shortness of breath. These symptoms are generally short-lived after an acute exposure to OC, usually resolving in 15 to 30 minutes.

Because OC exposure results in symptoms of cough and subjective shortness of breath, some have questioned whether OC causes significant respiratory compromise. We conducted a clinical study in which we exposed 34 human subjects to OC spray versus placebo, after which we measured pulmonary lung function, ventilation, blood oxygenation and carbon dioxide levels.<sup>14</sup> There was no evidence that OC spray inhalation caused any decrement in respiratory function, ventilation or blood oxygen levels. None of our subjects suffered any acute or chronic injury or compromise of lung function from the OC exposure. Moreover, OC spray has been in wide use by law enforcement agencies and the public alike for over a decade. Large epidemiologic studies of OC use in the field fail to show any significant risk for respiratory compromise

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from these exposures.<sup>15,16</sup> Watson et al reviewed nearly 1000 cases of OC exposure and found that none had any significant injury.<sup>15</sup> The State of California Attorney General reported on over 20,000 OC spray exposures, none of which resulted in significant respiratory compromise, failure or asphyxiation death.<sup>16</sup> Accordingly, there is no evidence to indicate that OC spray inherently causes respiratory compromise that would put an individual at risk of asphyxiation.

In Mr. Mears's case, there was no indication that he was suffering asphyxiation or respiratory compromise after exposure to OC spray. Initial evaluation by first responders and hospital personnel indicate he was breathing and vocalizing without difficulty. His initial cardiac arrest also did not occur until over an hour after his OC spray exposure when the most significant effects would have resolved had there been any significant impact.

During the struggle with officers, there were multiple activations of a Taser device to Mr. Mears. By way of background, the Taser is a handheld law enforcement weapon that falls in the category of a conductive energy device (CED). The Taser delivers a high-voltage, low frequency electrical impulse via either probe or drive-stun mode. Numerous studies have now been conducted to evaluate the physiologic effects and safety of the Taser device. My research group has conducted a number of these studies which have found no evidence of electrocardiographic changes, cardiac or heart injuries, respiratory compromise, or significant metabolic disturbances associated with the device.<sup>17, 18, 19, 20, 21, 22</sup> Moreover, our findings have been replicated by other investigators who have also demonstrated no significant inherently deleterious physiologic effects in human subjects under laboratory testing or the field setting.<sup>23, 24, 25, 26</sup>

In Mr. Mears's case, he was exposed to the multiple Taser shocks nearly an hour prior to his initial cardiac arrest in the Emergency Department. After the exposures, he was noted by first responders and hospital personnel to be awake, breathing, with a pulse and circulation, and moving purposefully during the intervening time. Given that, it is clear that the Taser shocks did not result in any so-called "cardiac capture" or immediate cardiac arrest as a direct result of the Taser shocks at that time.

In conclusion, it is my opinion that Mr. Mears's death was not caused by positional, restraint or compression asphyxiation as a result of the manner in which he was restrained by law enforcement officers. In addition, his exposure to OC spray and Taser shocks did not result in respiratory compromise or immediate cardiac arrest that led to his subsequent death.

In accordance with the Rules of Civil Procedure, my compensation for services rendered in association with this case are \$500/hour, including travel time and expenses. Prior cases in which I have provided testimony over the past four years are: *Smith v. Gorman*, Minnesota, 2013; *Blondin v. City of Snohomish Police Department*, Seattle, Washington, 2014; *Hesterberg v. National Park Service*, San Francisco, California, 2014; *Flannery v*

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City of Indianapolis, Indiana, 2014; Garlik v. Kern County, 2015; Russell v. City of Los Angeles, 2015; Abrego v. City of Los Angeles, 2016.

Should you have any further questions, please do not hesitate to contact me at any time.

Sincerely,

A handwritten signature in black ink, appearing to read 'Theodore C. Chan', with a stylized flourish at the end.

Theodore C. Chan, MD  
Professor and Chair  
Department of Emergency Medicine  
University of California San Diego



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